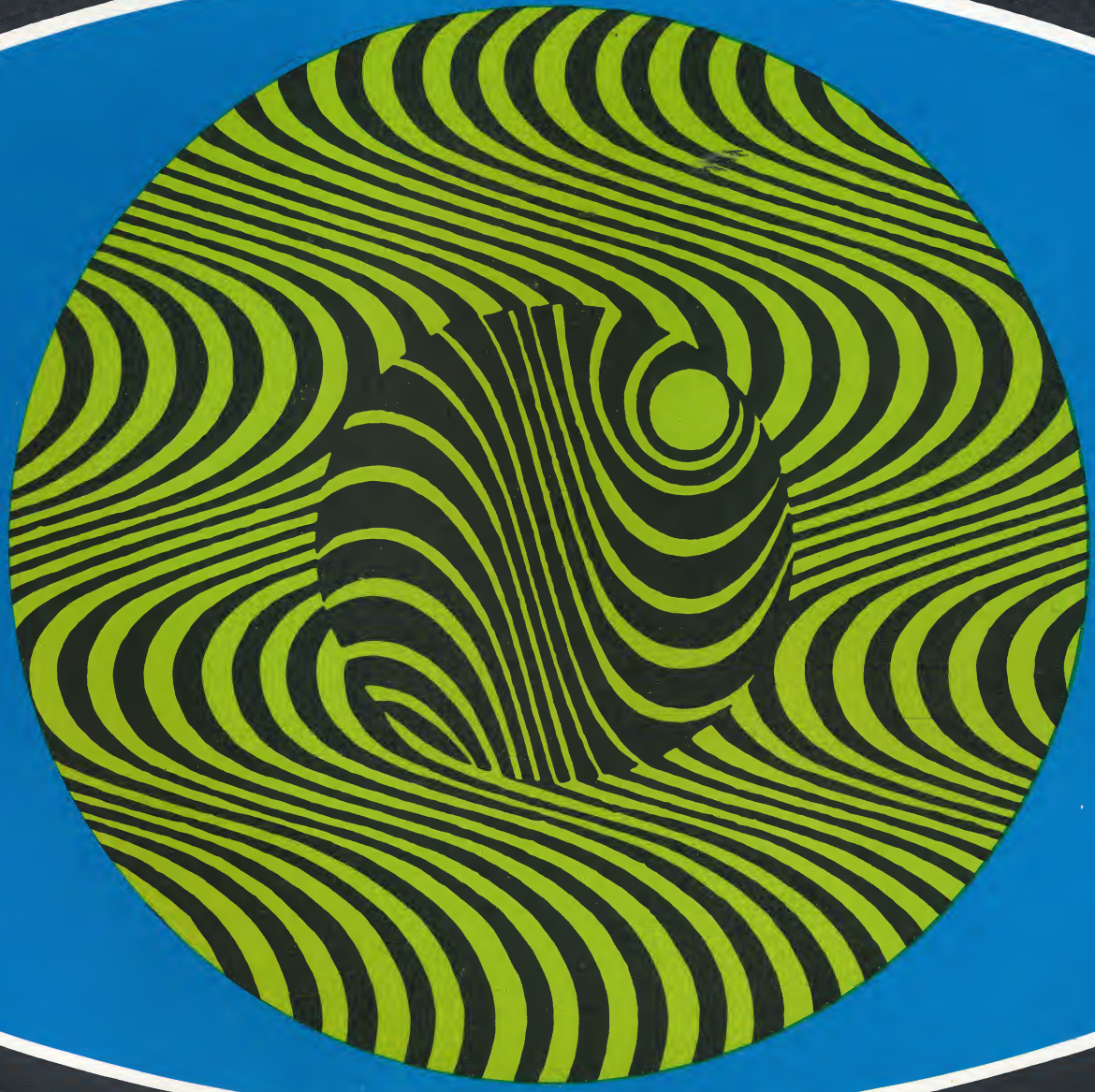
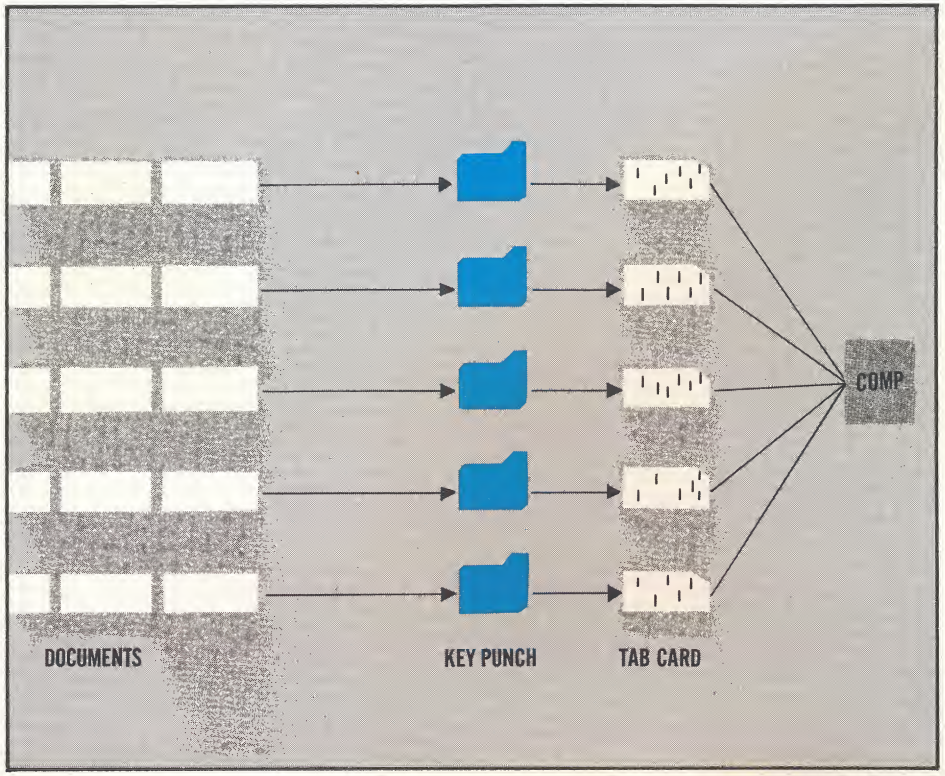
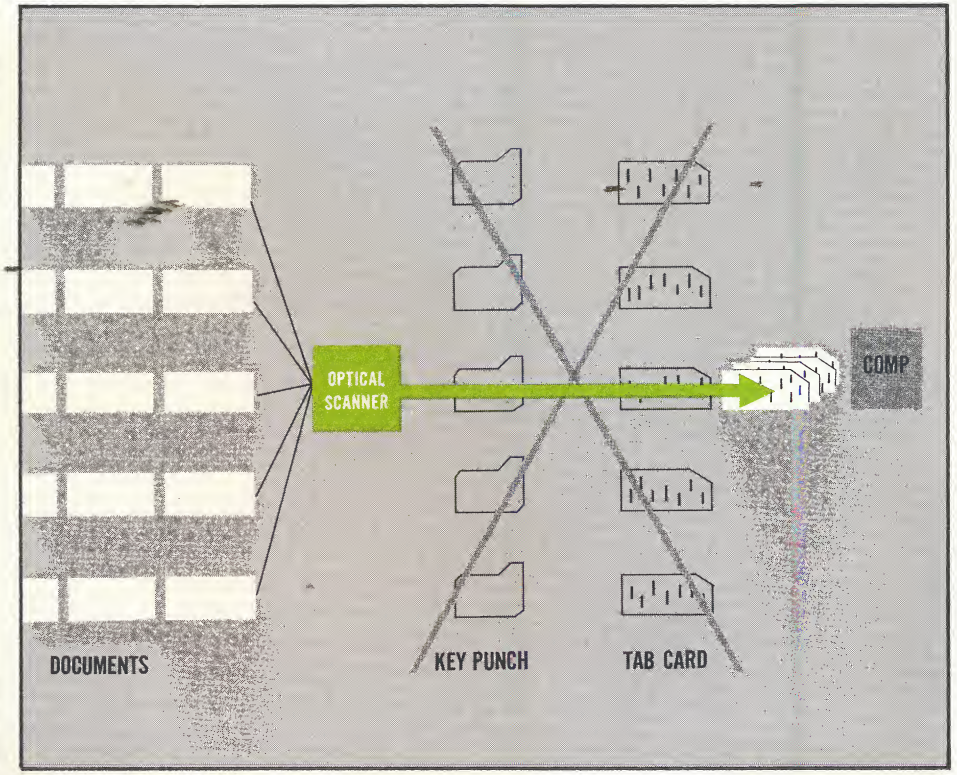


CARE AND FEEDING OF THE OPTICAL SCANNER

THE STANDARD REGISTER COMPANY





The optical scanner is the most exciting new addition to the prolific family of electronic data processing hardware. Its impact on automated systems has hardly begun to be felt, but it is rapidly coming of age. More and more businessmen are investigating the time and cost saving potential of this electronic infant.

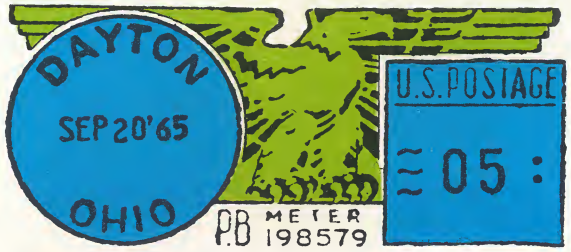
For this reason The Standard Register Company has prepared this booklet to provide a basic understanding of optical scanning and of forms design and construction considerations involved in paperwork systems incorporating optical scanning.

Basically, a scanner is a bi-lingual, speed-reading machine. Using a photo-electronic system, it can recognize "human-readable" characters (such as numbers, letters and symbols) up to a rate of *3000 per second*—and almost instantly, translate them into "machine-readable" code that computers can understand.

Why is the optical scanner needed? Because it opens the bottleneck in data processing systems caused when computers and other high-speed equipment gobble up information faster than it can be prepared for them.

It eliminates the clerical task of manually keypunching tab cards or manually coding paper tape for computer processing.

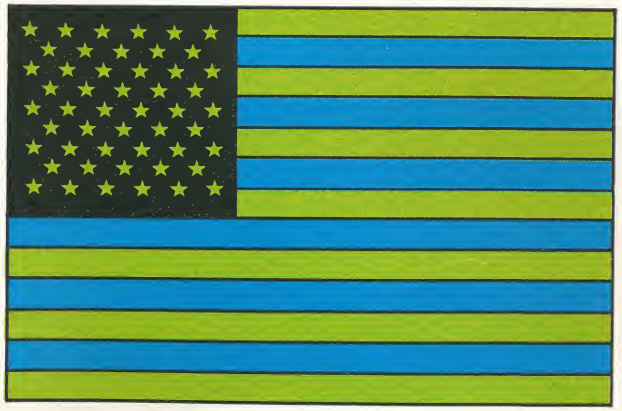
Often called the "missing mechanical link in EDP", the optical scanner accelerates input speed to match output speed. It helps cut costs. It adds another dimension to paperwork simplification. In one hour, it can read and process a volume of data equal to the output of 150 keypunch machines!

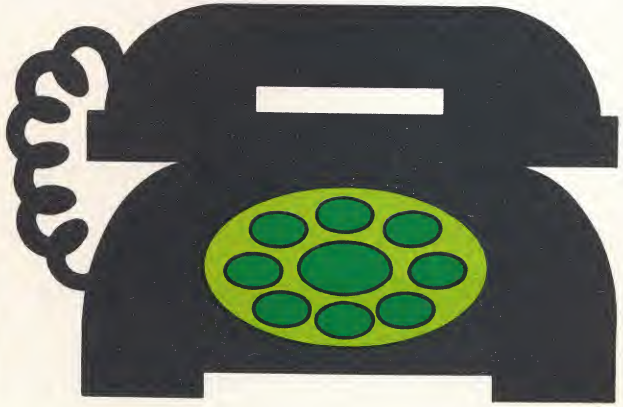


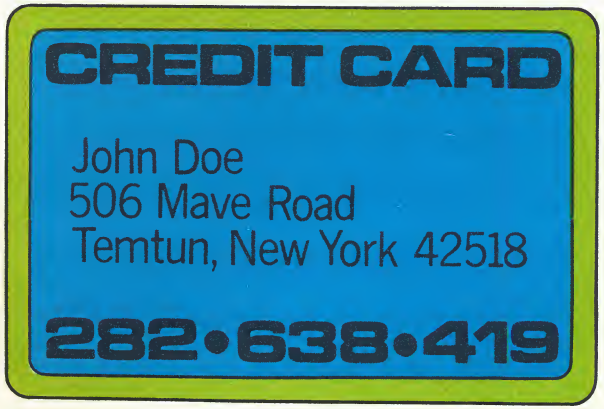
The first practical scanner that could read characters was developed in 1952. Early applications were rather limited, to uses such as credit card sales slips in the petroleum industry.

It was not until about five years ago, when lower cost computers came into general use, that optical scanning received first recognition as an important economic tool in computer systems to bypass keypunching.

Since then, scanners have become progressively more versatile and sophisticated. Some now read handwritten marks as well as machine printed letters, numbers or symbols. They are used in the petroleum industry, utilities, insurance companies, schools, dairies, publishing firms, department stores, mail order houses—and a host of other private and governmental agencies for a variety of uses.





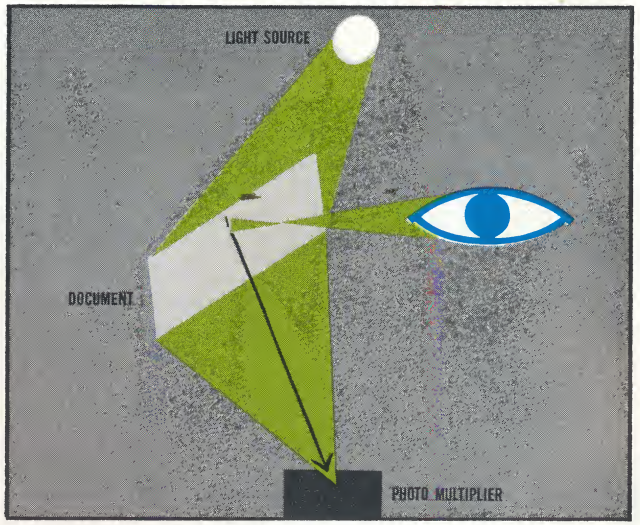


Right now they may be reading your gas, electric, water or phone bill—updating your credit charges, premium payments or book club purchases—grading your youngster's school work, or scanning inventory or delivery records for a firm you're doing business with. They also make payroll processing, licensing control, dividend check reconciliation and tax payment auditing, simpler and faster than ever before.

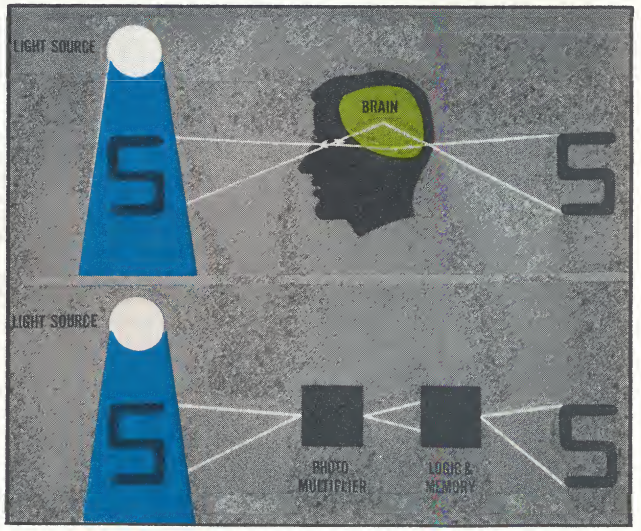
And, it probably won't be long before scanners will be able to read handwriting, and multiply their uses even further.

Technically, an optical scanner reads or recognizes by the absorption or reflectance of light on a document. It "sees" an image when light from a source flooding the document is *not* reflected. The light rays are directed against a photomultiplier and converted into electronic signals. (The arrow illustrates a non-reflecting area.)

When a character is identified, a given signal for it is transmitted from a memory unit to a tape unit or other output device for later read-out after the entire document has been scanned.

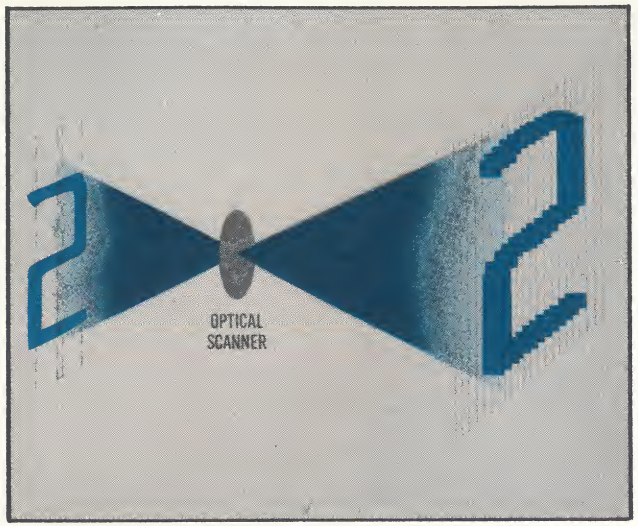


A scanner can be compared to human sight. When you look at something, you observe an image and the image is transmitted to your brain. The brain recognizes this image because it has been taught what a specific shape is. It has also been "programmed", in a way, to use this "data" for whatever purpose you desire.



Some scanners, for example, also look at an image and transmit it to the photomultiplier, where light is converted to electrical energy and passed on to the logic and memory units ("brain") of the machines. They can thus recognize, or "read", any information that they have been programmed to recognize.

There are two important differences between optical scanning and human recognition, however.



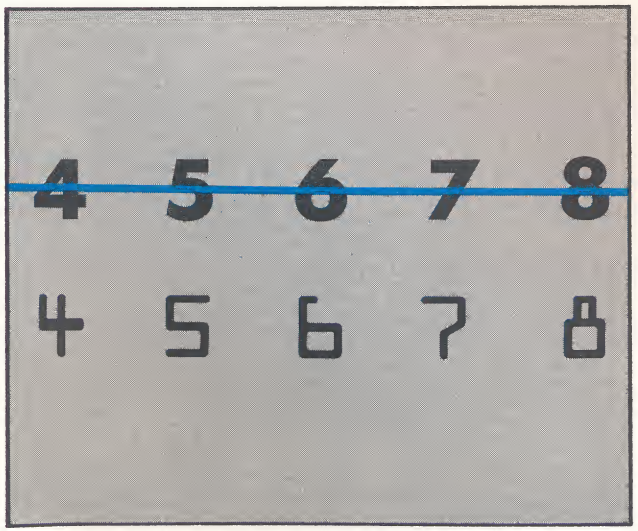
First, while the human eye looks at the entire image in a single glance, the scanner looks at only a very small portion of the image at one time. It then accumulates these small bits and pieces until it finally recognizes the whole character.

The second difference concerns distortion of the image. To you, a distorted number 5 would probably still register in your mind as a 5.

Although the scanner is a lot faster than a human at speed reading, it's not quite as smart. If there is much distortion, the machine simply cannot recognize this as a number 5. Since it sees *everything* on the paper that is non-reflective, any number of things can distort its image of the character—among them improper printing, carbon or ribbon smudge, ink tracking, dust or paper dirt.

Because the machine compares the image it "sees" with that programmed into its mechanism, if it cannot find a suitable comparison, it will reject the image—and sometimes the document, depending on the reading program.

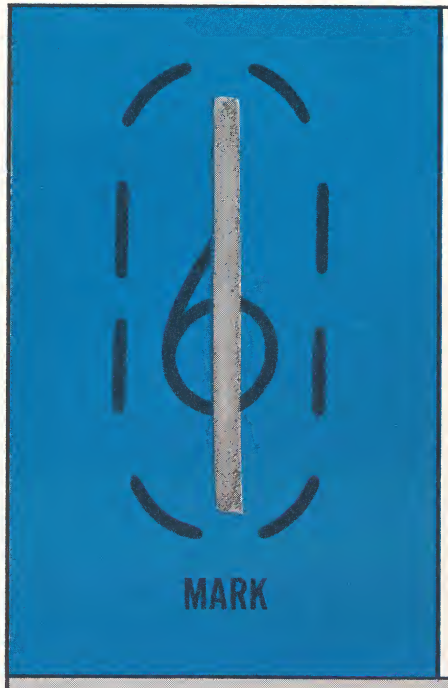
Also, an extraneous smudge, speck or splatter might make the character look like something else —a 3 like an 8, for instance. In this case, the scanner would misread it and feed wrong information into the computer—with obvious results. This is called substitution.



It should be noted here that scanners today recognize only certain type fonts (although there are some multi-font scanners) and these fonts vary with the specifications of individual manufacturers.

However, the shape and style of type characters read by the scanner very closely resemble what we might call "normal" type that's read by humans. Conventional business machines—such as typewriters, tabulators and high-speed printers—can be easily equipped with these fonts, if they are not already so equipped.

Some scanners, moreover, can be programmed to recognize several different fonts. Efforts are being made right now to establish *one* standard type font for *all* optical scanning, as was done for MICR (Magnetic Ink Character Recognition) in the banking industry.

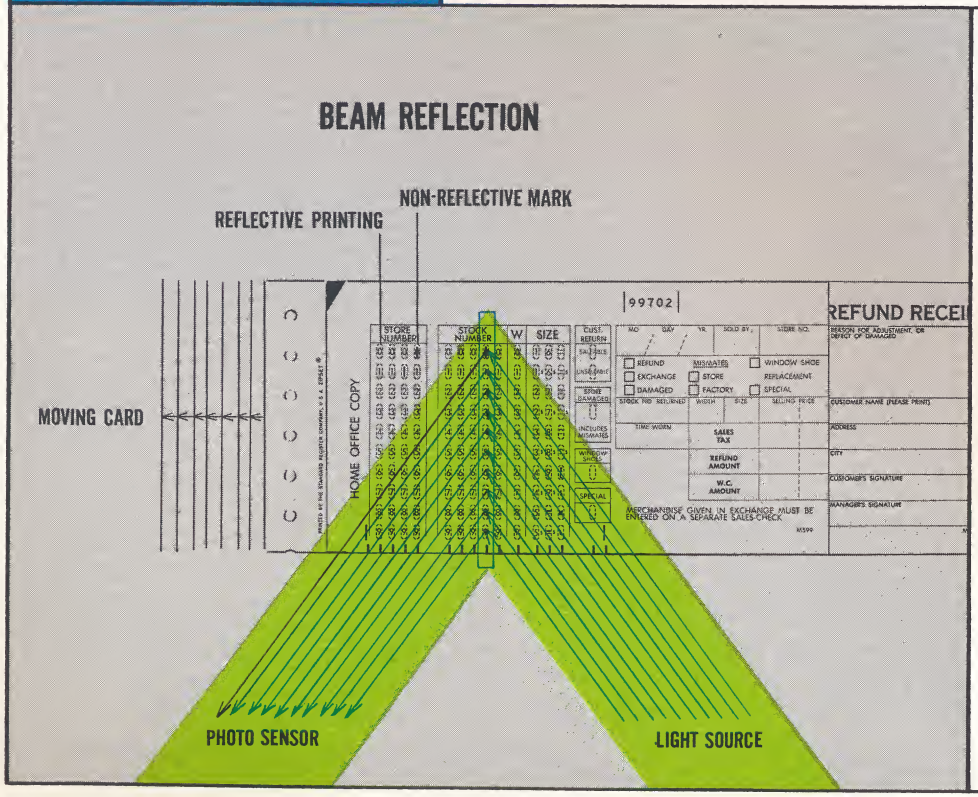


So far, we have described a type of recognition called Character Reading. But there is another type of optical scanning called Mark Reading. Some scanners are capable of both; others can only recognize either printed characters *or* marks in a certain area on a page.

The difference between the two types is this:

In Character Reading, the scanner observes the actual printed character and recognizes it by its SHAPE.

In Mark Reading, the scanner beam simply seeks out a mark to which it can assign a value by virtue of the LOCATION of the mark on the page.



Here's how a scanner mark-reads a document: In the illustration at left, the light beams are searching each one of the numerical values within the individual columns. There is a mark in the number "0" position. As the light strikes this mark, it is absorbed by the mark and does not reflect into the photosensing device. This break in the light beam causes the scanner to react. (The black arrow represents the area of non-reflection.)

In the second position, and on down through "9", the light beams are not hitting a mark. They are being reflected from the paper and observed by the scanner. The ink on the form is reflective and does not absorb the light.

Scanners recognize mark read data by the absorption of light in the marking positions—and also by the timing marks along the bottom of the form which trigger the reading operation in that area.

Page readers of the IBM 1230 series (see page 9), which are used for grading tests, are good examples of mark reading.

SINGLE CHARACTER LINE

5286421

L4D9MROGER E GIERLICHMR1 B119CMMDARLANMM.

SALES FILE SCANNER INPUT - ORDERS/CONVERSION

TWO LINES OF CHARACTERS

NORTHERN ILLIN
GAS COMPA
50 FOX ST., AURORA, ILLINOIS
RETURN REQUESTED

AURORA ILLINOIS

FIRST CLASS MAIL
U. S. POSTAGE
PAID 4¢
PERMIT NO. 64

*SEE OTHER SIDE FOR EXPLANATION

ACCOUNT NUMBER	RATE	*PGA	*BTU
5227222691		2	171.040

SERVICE DATES: FROM 1-31 TO 4-02
PREVIOUS BALANCE

READINGS PREVIOUS	READINGS PRESENT	100 CU. FT.	CURRENT NET
00340097		63	937

FOLD HERE

PENNY FLAME
202 RAILROAD ST
ANYTOWN, U.S.A.

FORM NO. BP-0301 11-62

00 5227222691 3 937
6 1068 41763
RETURN THIS STUB WITH PAYMENT

$ 1068APR17635 937
DUE AFTER AMOUNT NOW DUE

ONE LINE CHARACTER—ONE MARK-READ FIELD

0246-03994

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HOME OFFICE COPY

① STOCK NUMBER	W	SIZE

② STOCK NUMBER	W	SIZE

MO.	DAY	YR.	SOLD BY
			AMOUNT
③			
④			
⑤			
⑥			
⑦			
D			SALES TAX
E			EXCISE TAX
E			TOTAL SALE

In general, the capabilities of optical scanners now in use are limited to these five types of scanning, in one "pass" through the machine.

MARK-READ FIELD

SIGNED BY | SECTION | STATION | DATE

OTHER TIME CODES		EMPLOYEE NUMBER	VEHICLE NUMBER	CLASS	SHIFT	TIME CHARGED TO SERV. FUNCT. SCHEDULED HRS.	SCHEDULED MIN.	OVER HRS.	OVER MIN.	NS HRS.	NS MIN.	OTHER HRS.	OTHER MIN.	OTHER CODE	CARD CODE
CODE	ITEM														
01	VACATION	0	0	G	0	0		0		0		0		0	0
02	SICK	1	1	A	1	1	15	1	15	1	15	1	15	1	1
03	VOLUNTARY	2	2	AA	2	2	30	2	30	2	30	2	30	2	2
04	INJURY	3	3	B	3	3	45	3	45	3	45	3	45	3	3
05	JURY DUTY	4	4	C	WKDAY	4		4		4		4		4	4
06	DISCIPLINARY	5	5	D	SAT	5		5		5		5		5	5
CODE	LOANED TO	6	6	H	SUN.	6		6		6		6		6	6
10	METER SHOP	7	7	P		7		7		7		7		7	7
11	STREET	8	8	N		8		8		8		8		8	8
12	METER READING	9	9			9		9		9		9		9	9
13	STOCK														
14	COMMERCIAL OFFICE														
15	CONTROLLER														
19	OTHER DEPARTMENTS														
CODE	BORROWED FROM														
20	METER SHOP														
21	STREET														
22	METER READING														
23	STOCK														
24	COMMERCIAL OFFICE														
29	OTHER DEPARTMENTS														

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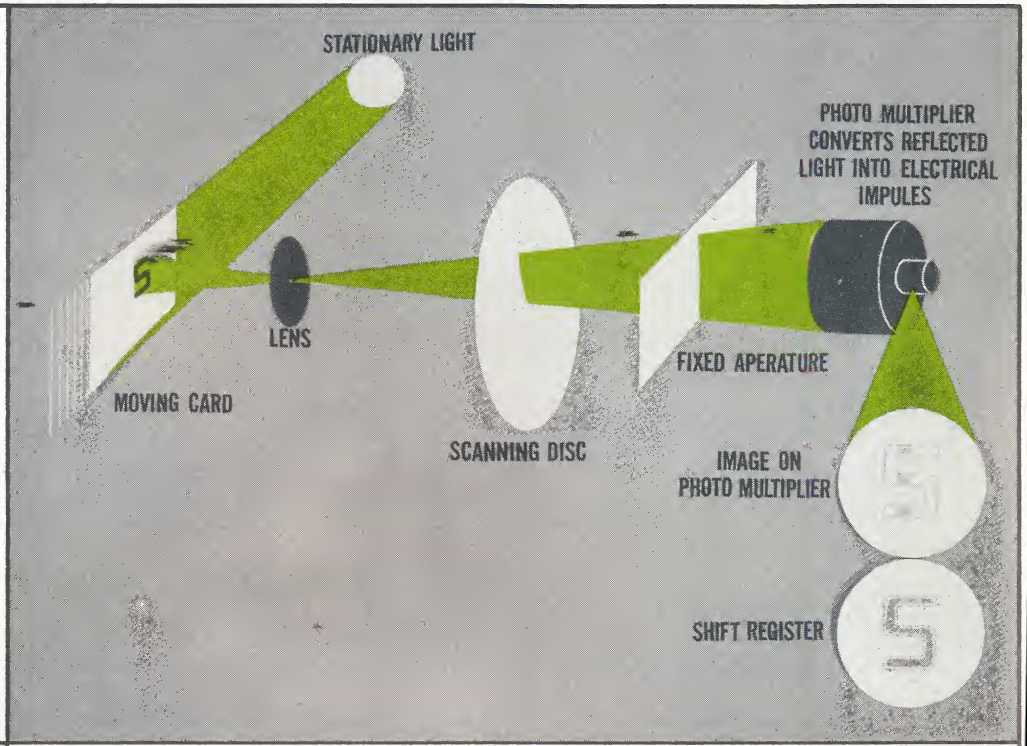
SERVICEMAN'S BATCH TICKET
MAR-O-DEC 64

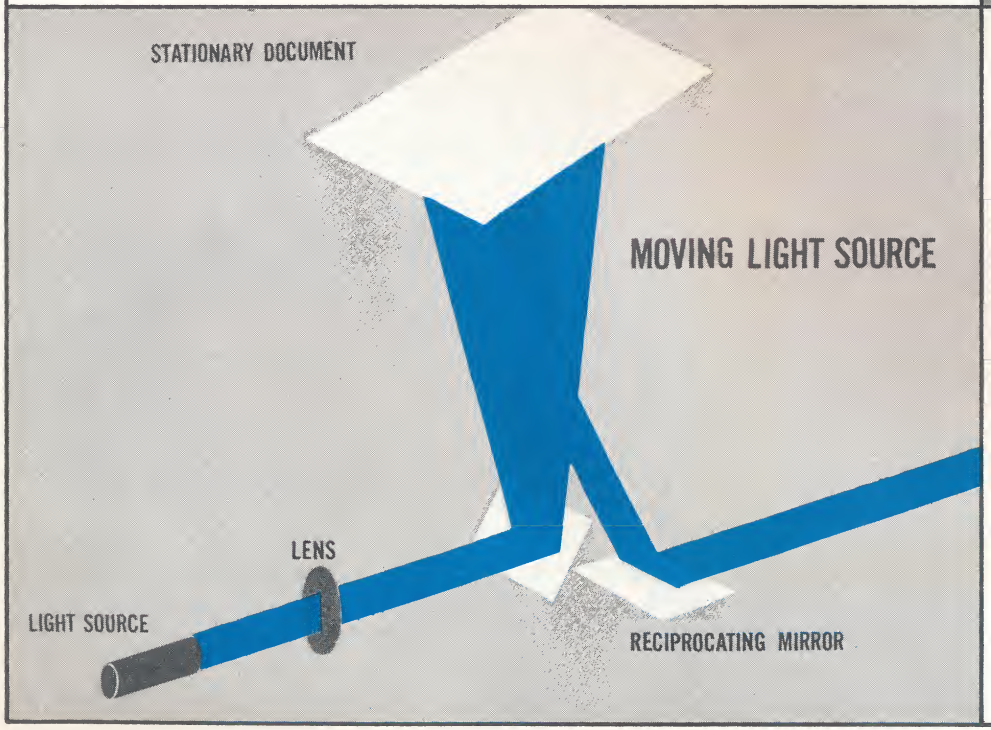
MULTILINE

MRS J J RUMPH‡RD 1 BOX ■454‡SMYRNA GA‡80
MRS R L ■CAUBLE‡RD 2‡DULUTH GA
MRS HUGH W TERHUNE‡1258 MAYFAIR DR NE‡ATLANTA GA‡24
MRS ALLEN SMITH‡CORNER RD‡RD 1‡POWDER SPRINGS GA
~~MRS R G~~ TUGGLE‡1563 RUNNYMEADE DR NE‡ATLANTA GA‡0
MRS T D TARRANT‡1451 BLUEFIELD DR SW‡ATLANTA■ GA‡10
MRS TED FLEMMING‡5500 MT VERNON PKWY NW‡ATLANTA GA‡05
JOYCE E DODSON‡1420 EASON ST NW‡ATLANTA GA‡14
MRS J R ABERCROMBIE‡657 LAWTON SW APT 4‡ATLANTA GA‡10
MRS BEULAH MUR■PHY‡657 LAWTON SW APT 5‡ATLANTA GA‡10
MRS K S PHILLIPS‡987 SPRINGDALE RD NE‡ATLANTA GA‡06
MRS ONA WOODRUFF‡699 INDIAN CREEK DR N‡CLARKSTON GA
MAXINE B PORTER‡15A HOLLAND PARK DR‡RD 1‡ELLENWOOD GA
MRS LARMAR JOHNSON‡2615 SNAPFINGER RD‡DECATUR GA
MRS PAUL E STOUF■FER‡1856 COLLAND DR NW‡ATLANTA GA‡18
MRS MARTHA HOLT‡RD 1‡VILLA RICA GA
MRS CHAS H CLEMENT‡4353 CHAMBELEE DUNWOOD RD‡CHAMBLEE GA‡05
MRS C H CLEMENT JR‡2 MARKET COURT‡CHERAW SC
MRS J M ■■HENDERSON‡841 FREDERICA ST NE‡APT 3‡ATLANTA GA‡06
MRS ROBT G WEBB‡3602 WASCANNA RD‡APT 3‡HAPEVILLE GA
MRS P WILLIAMS‡546 MARSH RD‡PITTSF■ORD NY‡34
M■RS WANDA VOORHEIS‡562 N GRACE RD‡HILTON NY‡68
MRS W C WITHERS‡95 LONG POND RD‡ROCHESTER NY‡12
MRS WM FELLOWS‡25 VALIANT DR‡ROCHESTER NY‡23
MRS W C GILETTE‡31 LACONIA PKWY‡ROCHESTER NY‡18
M■RS M PIERCE‡■22 CLIFFORD AVE‡ROCHESTER NY‡21
MRS R C FISHER‡109 HIGHLAND PKWY‡ROCHESTER NY‡20
MRS WM MAIER‡49 LEANDER RD‡ROCHESTER NY‡12
DARROW BEAUTY STUDIO‡831 CULVER RD‡ROCHESTER NY‡0■9
MRS MARY BISHOP‡1663 RIDGEWAY AVE‡ROCHESTER NY‡15
MRS HARRY VILBUR‡219 SCOTTSVILLE RD‡ROCH■ESTER NY‡11
MRS WM FENNELL‡290 MAIN ST S‡CANADAGUIA NY‡24
MRS ■N LENE‡80 KINGSLEY RD‡ROCHESTER NY‡12
MRS E HOLT‡204 BRUNSWICK ST‡ROCHESTER NY‡07

Scanners operate in two different ways. They may have a fixed light and a moving document, or a moving light and a stationary document.

With a fixed light, the document is scanned only once; either everything is read and translated—or the document is rejected. Rejects may be reprocessed, and a certain number may be picked up on subsequent passes. Any remaining rejects must be manually handled.

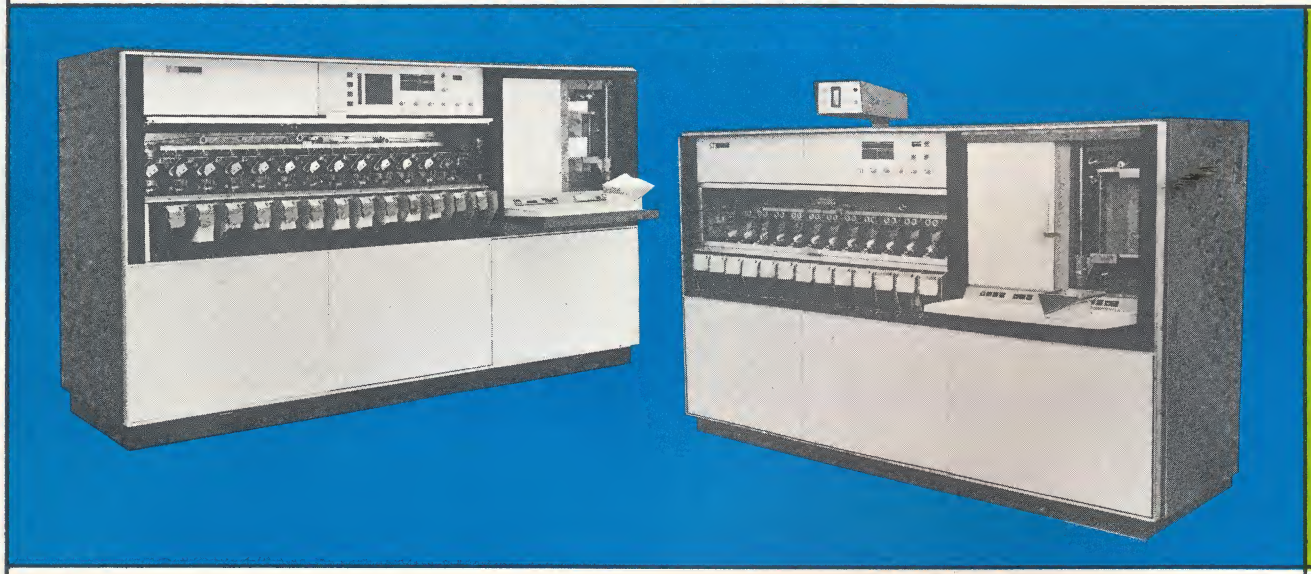




With a moving light, the beam can sweep the scanning area several times if it does not get a definite recognition signal from every character. Here again, the program determines how many times the beam will sweep the field.

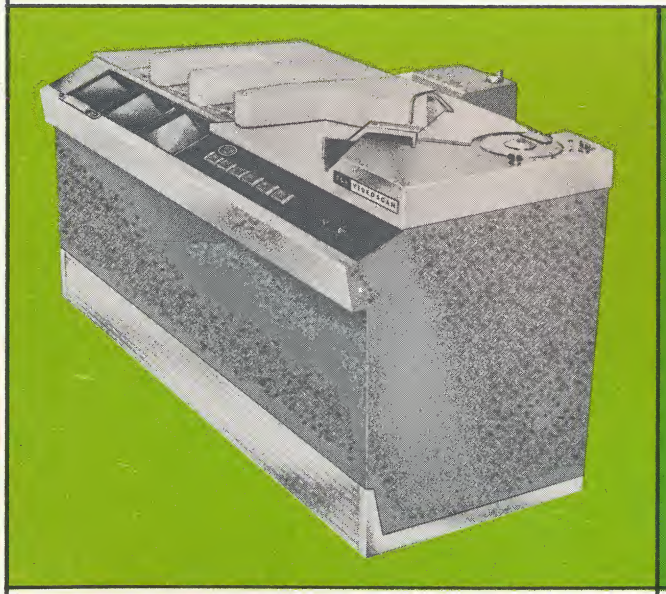
After the entire document has been scanned, the resultant machine language-coded information can be handled either "off-line" (in the form of punched cards, magnetic tape or punched paper tape) or "on-line" (transmitted directly into the computer), depending on the scanner used.

OPTICAL SCANNERS IN COMMON USE TODAY



Two similar looking scanners are the IBM 1418 and 1428. They differ in that the 1418 can read only numbers and such special symbols as a dash or lozenge, while the 1428 can read both numbers and letters plus additional symbols.

The Farrington Document Reader belongs to this same general category—alphabetic and numeric reading.



The RCA "Videoscan" presently reads only numbers.

The IBM page reader in the 1230 series recognizes only pencil marks on a sheet of paper, assigning each a numerical value determined by its location on the page. It cannot read the printed character. However, other page readers *do*.

This is an IBM 1282 Optical Card Reader Punch. It can read credit card information in three different type fonts put on a document by either an imprinter or high speed printer. It can also read information in a mark read field.

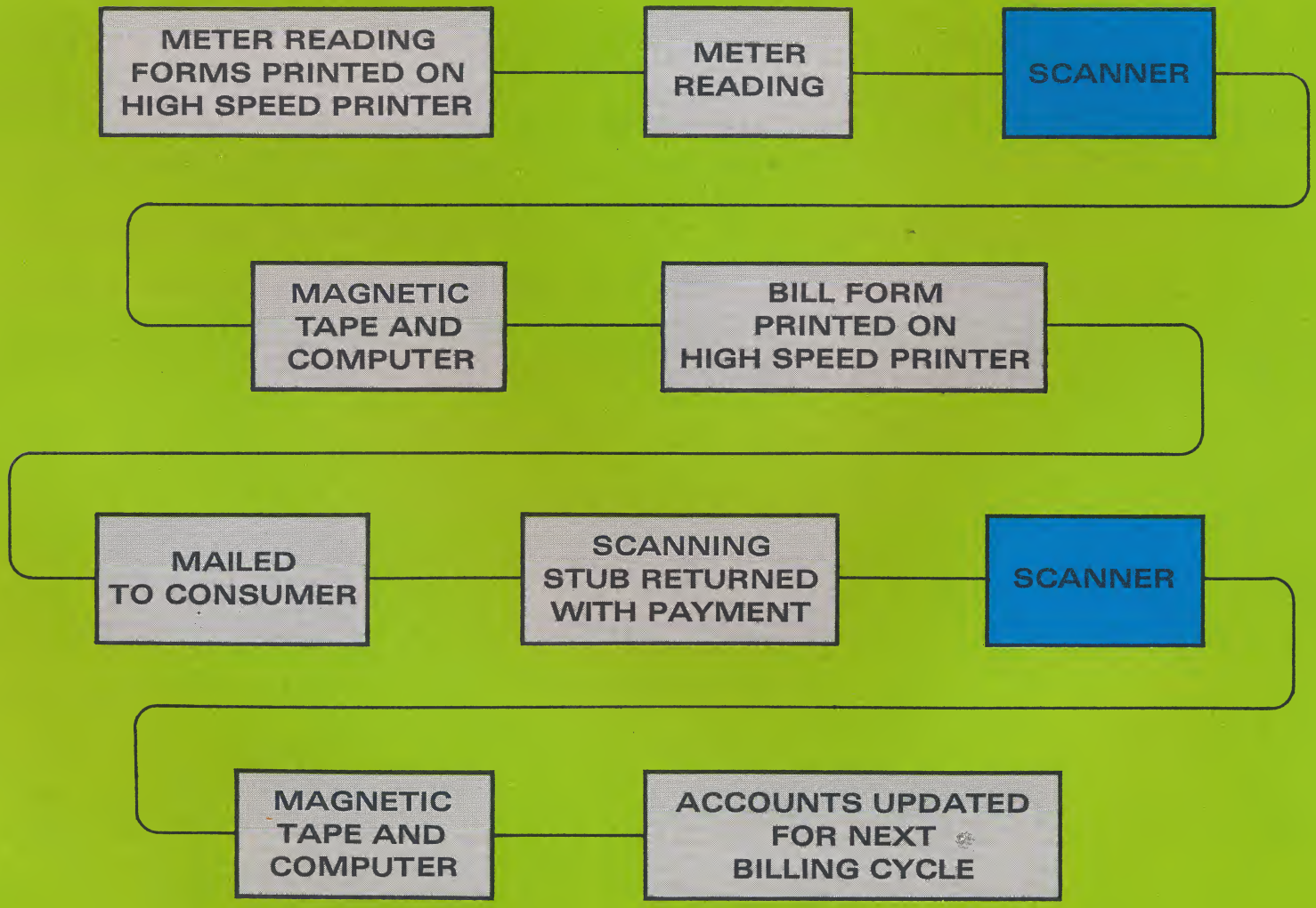
HOW THE SCANNER FITS INTO A PAPERWORK SYSTEM

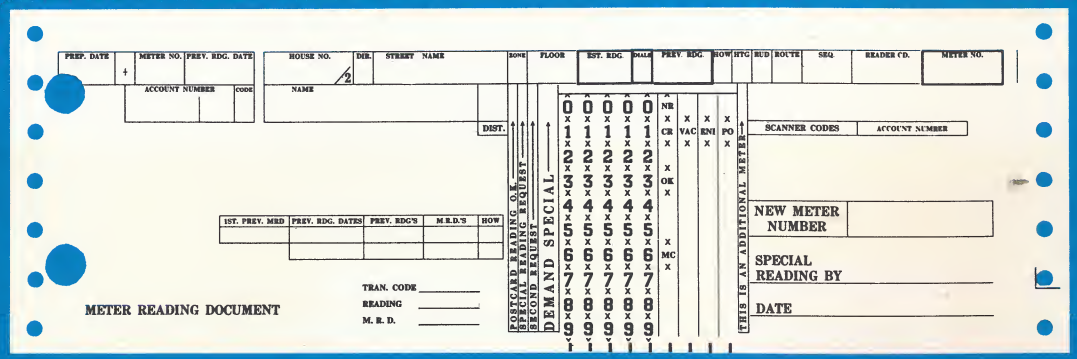
Below and on the following pages are system descriptions, forms design and construction facts, and tips gathered from actual scanning applications, involving forms produced by Standard Register, which are in successful operation today.

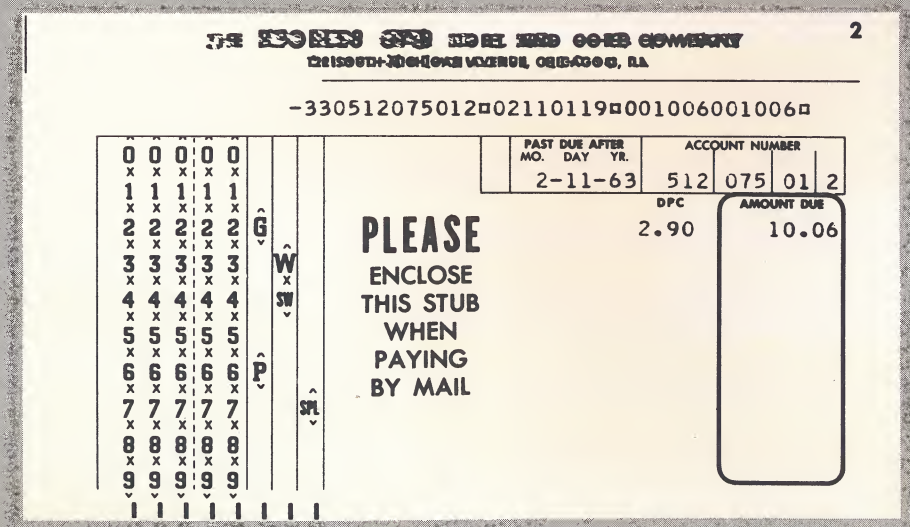
This information has been gathered by Standard Register engineers, systems analysts, forms designers and service representatives and is presented here for those considering the future inclusion of optical scanning in their EDP systems.

This typical utility systems flow chart includes both the meter-reading and billing operations.

TYPICAL UTILITY BILLING SYSTEM







The meter reading function begins when the customer's name, account number, and other pertinent information are recorded on the meter reading document — probably on a high speed printer from the previous month's billing records.

Next the meter reader (who used to handwrite data that required keypunching into a card before it could be processed) marks the information with a common pencil in the appropriate columns of the mark read field on the form.

At the end of the day, he returns it to the company where it goes to the optical scanner. The scanner translates the information into the customer's current meter reading, which goes in machine-coded form onto magnetic tape for computer processing.

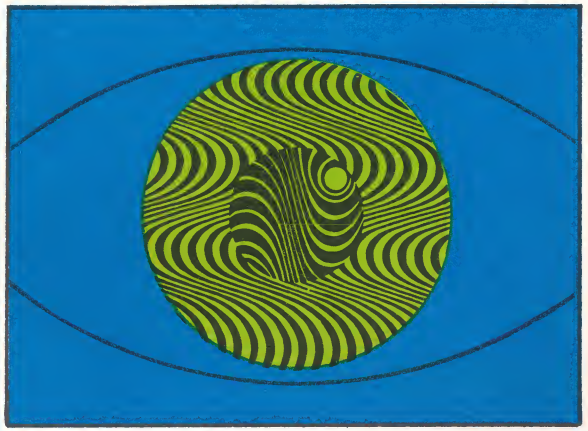
After the computer combines this with previous billing information stored in its memory, the high speed printer prepares a current bill, including due date, net and gross amounts. This is a "turnaround" document that is mailed to the customer and returned to company with payment. (Stub shown at left.)

If the total amount is received, the document is scanned and processed immediately. If not, a receiving desk clerk will enter the amount paid in the mark read field, and the scanner will later match payment with amount due, updating the customer's account on magnetic tape to be ready for the next month's billing.

What's different about this system? Not much. The meter reader still reads the meter and fills in a form. Billing is prepared in essentially the same manner.

But the optical scanner has eliminated two completely manual keypunching and card sorting operations! It not only reads the meter-reading form, but also relevant billing information for updating the customer's account.

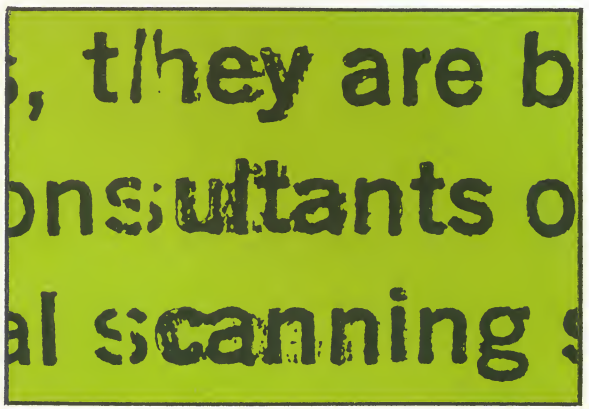
FORMS QUALITY IS A CRIT



With the exception of the mark read field, optical scanning forms do not seem different from many others. Yet there is one important difference that the human eye might overlook, but the electronic eye won't.

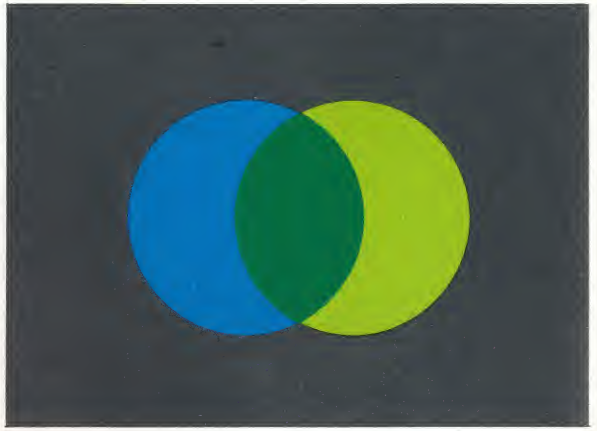
That's QUALITY—in the form itself, and in the printing. In this all-important area, the forms manufacturer is responsible to a great degree for the success of the optical scanning operation, since it determines the type of paper and any preprinting on the form.

Considering the paper itself, there are a number of extraneous non-reflecting materials that make forms indigestible to scanners. These include such things as dirt specks, wood pulp, slime spots, lint and mill wrinkles. Such little imperfections can cause the scanner to reject a document entirely as "unreadable" or, worse, to misread characters and pass along wrong information to the computer. If the document is rejected, it means manual handling; if it is not read accurately, it can be even more costly.



In general, scanners *prefer* a clean, white, uniform surface bond paper. It must be bright and reflective to provide maximum contrast between the printed character and background. Most scanners will also accept natural stock, with low porosity to increase its reflectance.

Some scanners will accept colored papers. Others are color-blind to certain colors. When a forms user specifies various colored papers for different applications, he must rely on the forms manufacturer to know the particular scanner's capabilities in this area.



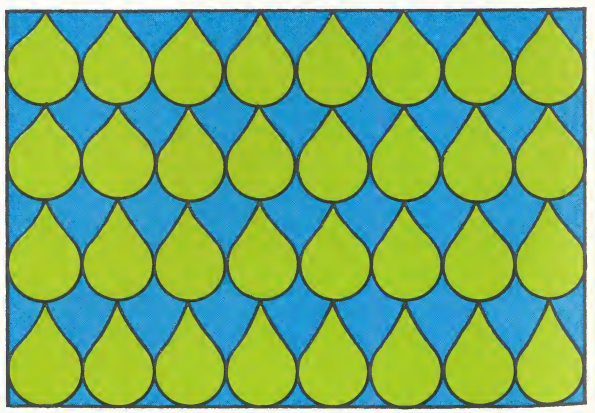
Weights of the paper which can be used vary with the scanner. The range is usually from 20 to 125 pounds.

As a rule, thickness varies from .004 to .010 inch. This factor, as well as the direction of the grain in the stock, must be tailored to suit individual equipment. The form must be extremely durable, since it will be processed over high speed machinery—frequently after considerable manual handling, as in the case of utility bills.

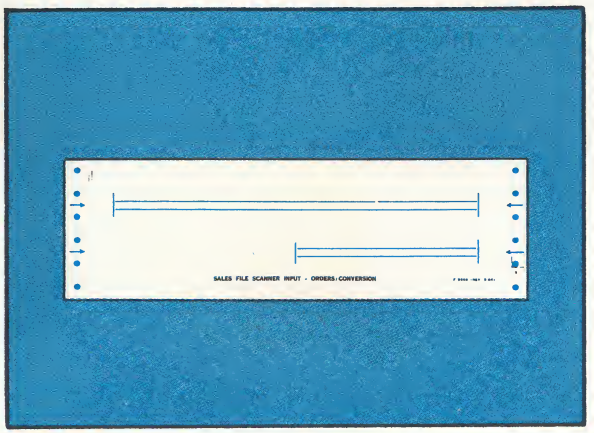
Temperature and humidity extremes must be carefully considered, too. Some forms such as oil company sales tickets are usually prepared outdoors. Minor changes in humidity can affect registration and make a form unscannable.

Even the optical density of the paper (amount of light penetration) must be taken into account. If it's inconsistent, it can change the background reflectance enough to confuse the scanner and reject the document.

For these reasons, paper that would ordinarily be suitable for use on a high speed printer in a regular data processing system may *not* have the quality necessary for optical scanning.



CAL FACTOR IN SCANNING

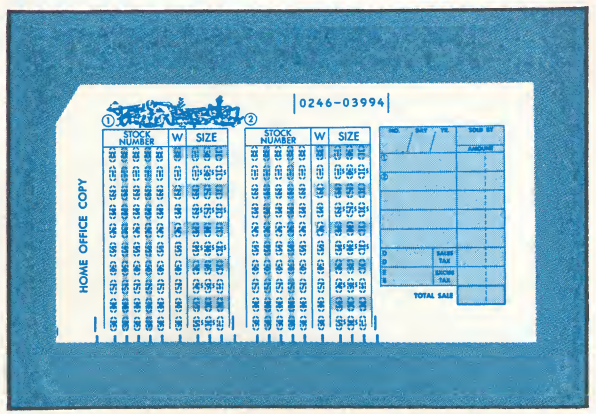


Another critical aspect of forms to be scanned is the printing.

First the layout or design must be considered. It must meet both the system requirements and the scanner's capabilities. The utility bill, for example, is not functional unless both the consumer and the scanner can read and understand it.

It's comparatively easy to design a form that people can understand at a glance. But we have to cater to the machine: specifically, in two things—ink used for the printing and the placement or position of the printing.

In selecting inks for a scanner form, the margin for error in choice between the two kinds—reflective and non-reflective—is sometimes very small. Reflective inks which cannot be seen by the scanner are used for the human reader. The light blues and reds commonly used, depending on the scanner, are called "dropout" colors because they are invisible to the scanner.



However, if the shade of red or blue—depending on the ink formulation — absorbs too much of the light rays, the scanner may confuse it with printed characters and reject the form.

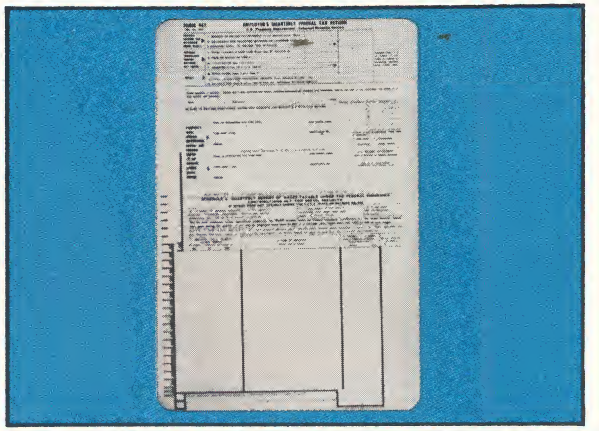
To make it technically more difficult, it cannot be said that *all* reds, blues or greens are sufficiently reflective to be invisible to the scanner.

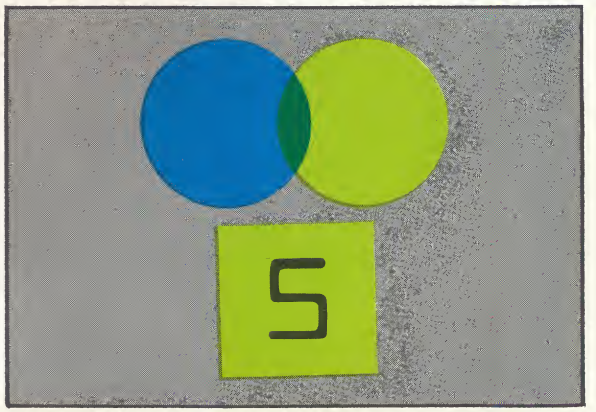
The inks must be carefully formulated to repel enough light to make them reflective. Even with the proper formula, there can still be trouble. There are reflective inks, for example, that become non-reflective if printed too densely.

Non-reflective inks absorb the light rays from the scanner beam and trigger the recognition system. They are used on the scanning form for preprinted characters (such as consecutive numbers) and timing marks (or "clock-marks") and field marks that activate the mark read cells.

Colored ink on colored paper may also present some problems. Light blue ink on yellow paper can cause the scanner to consider the reflectance of green — a combination of the two colors, rather than blue or yellow alone.

It is also extremely important that the press on which the form is to be printed is thoroughly cleaned to remove all traces of ink used on the previous run before a reflective ink is used. If the reflective ink is contaminated with other ink, the form may end up in the reject pile.





FORM TOLERANCES

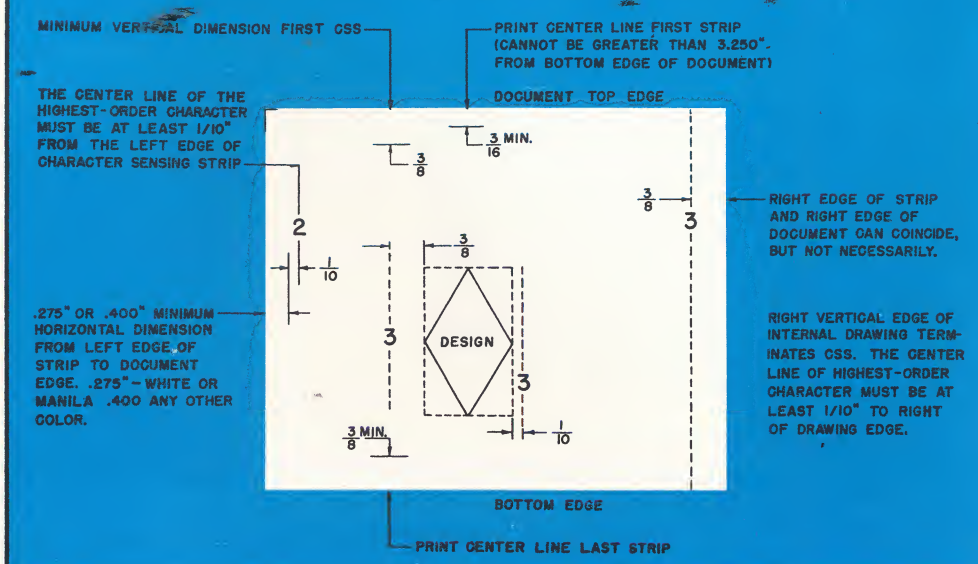
After the proper paper and ink have been selected, any preprinted area (or other area where information will be printed or marked) must be placed in just the right position, depending on whether it is to be scanned or not. This, too, will vary with abilities of particular scanners.

Spacing of characters is extremely important. Because, as fast as it reads, the scanner must still have a certain amount of time after it has finished "seeing" one character before it can begin the next. So characters cannot be printed too closely together. (Remember, the machine looks at many parts separately and then puts the pieces together for recognition.) This same spacing must be considered in the position of a character in relationship to the preprinted field mark, edge of the document, or any other preprinting on the form.

This illustration shows the position of the scanning field and its relation to the edges of the document and preprinted information. The diamond-shaped symbol in the center could be any other printing. Note the minimum distance between the last character to be read on the right of the symbol, and the first to be read on the left. This gives the scanner time to recognize the last character, then go on to the next.

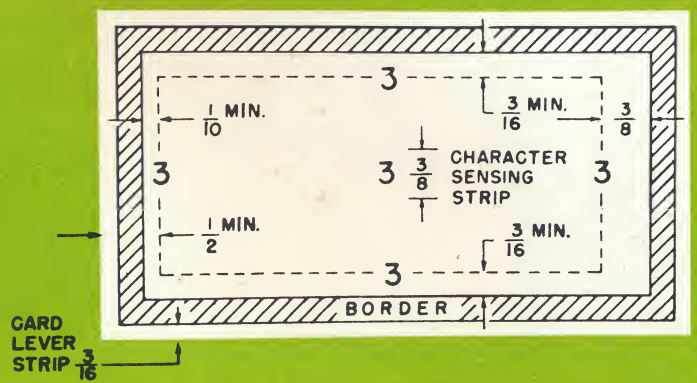
IBM 1418 and 1428 FORM TOLERANCES

CHARACTER SENSING STRIP WITHOUT DECORATIVE BORDERS



IBM 1418 and 1428 FORM TOLERANCES

FIELD LAYOUT WITH DECORATIVE BORDER



Many forms have a decorative border. This border has little effect if the form is used on a scanner that operates with a stationary document and moving light. But if the scanner uses a moving document and fixed light, the inside of the border must be considered as the leading edge to the document.

There are many other forms considerations for optical scanning. Generally speaking, a form layout which is fine for keypunching, will not be useable with a scanner. The forms manufacturer and the user must work closely together to design a compatible scanning form. And, of course, both parties must be thoroughly familiar with the capabilities and limitations of scanning equipment.

ONLY GOOD IMPRESSIONS COUNT

In encoding characters to be optically scanned, it is vitally important to get a sharp, clear image—one free from irregular edges caused by such things as carbon or ribbon smudge, distortion or character voids.

A ribbon smudge, for example, isn't too apparent to the naked eye. But when magnified by the scanner, it can make a big difference. A tiny smudge approximately .007″ in diameter can adversely affect scanner operation.

Fortunately, there are ribbons available which meet optical scanning needs. These should be used on high speed printers, tabulators, or typewriters that record information on scanning forms.

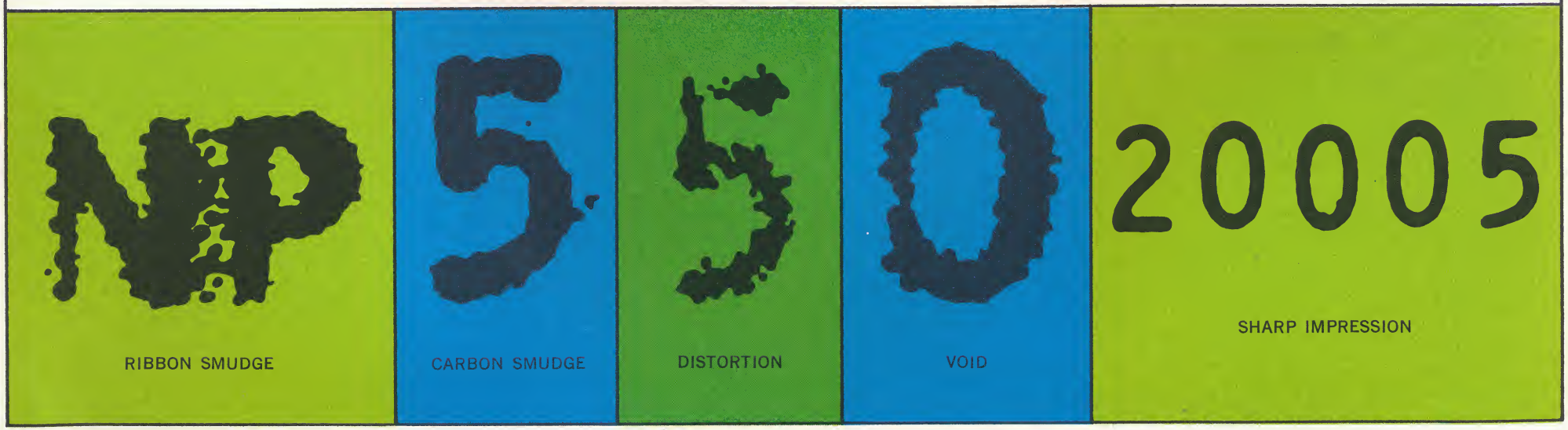
Similar problems may arise with carbons. While most scanning operations today use single-part forms or original copies of multiple-part forms, there are occasions when original copies cannot be used. An example is a tab card set, such as the Standard Register ZIPCARD®, which is generally run on encoder-type equipment. Special smudge-resistant carbons can be used to provide sharp impressions for scanning.

The quality of the carbon impression is also very important in tab card sets which receive multiple handling as in department store or service station systems.

Another danger from smudging lies in the transfer of extraneous carbon particles when a form is squeezed around embossed type. If the carbon is too hard, there may be voids and irregularities within the character impression. So, the quality of the carbon impression is as important as the quality of the paper itself.

Encoders vary to a large degree. So do the types of plates used on them. For instance, a credit plate carried in a purse or hip pocket can be easily distorted, and it will make an incomplete impression when used.

If the imprinter or credit plate is faulty, even the best scanning carbon can't compensate for it. For this reason, all equipment involved in encoding applications should be frequently checked for maintenance and proper adjustment to provide a uniform character with good contrast.



The time and cost saving benefits which can be gained from optical scanning are unquestioned. It is also clearly evident that the physical make-up of the forms carrying the data to be scanned has much to do with the success or failure of the system. For this reason, we offer these facts for your consideration as to the capabilities and facilities The Standard Register Company can put at your disposal to assure that your optical scanning forms will be correctly conceived, designed, manufactured and put into use for efficient, trouble-free operation:

Experience with Scanning—For the past ten years members of Standard Register's Engineering and Research Division have been in contact with and worked with their counterparts in firms developing and producing optical scanning equipment. As the equipment has been placed on the market and installed, Standard Register has been called upon to supply the forms for many successful scanning systems.

Engineering and Research—Staff members of this important division of Standard Register (the largest of its kind in the forms industry) for many years have been engaged in continuing investigation of all elements involved in an optical scanning installation: equipment specifications and capabilities; composition and characteristics of papers, carbons and inks; printing techniques; forms design, construction and fabrication requirements; development of auxiliary forms handling equipment to feed and control forms on the forms writing equipment according to exacting optical scanning requirements.

Systems and Forms Design Assistance—In addition to the training given all Standard Register sales representatives on Paperwork Simplification techniques, they are backed by a staff of specialists in systems analysis or forms design whose services are available as consultants or as team members working on paperwork problems. These men all know the requirements of optical scanning systems, and they can save costly hours and days of trial and error in applying their knowledge to planning new scanning systems.

National Service Organization—Installation of devices and systems and service after installation is the responsibility of the men in our National Service Organization. Through preventive maintenance, standby and emergency service, they see to it that downtime, due to mechanical or forms problems, is kept to a minimum. There are over 80 trained specialists located strategically across the country ready to give fast action on service problems wherever they may be.

Written Warranty—Optical scanning forms, like the other forms produced by Standard Register, are warranted in writing to be produced according to exacting published specifications which will assure satisfactory performance over the equipment involved.

Research, know-how, technical competence, back-up and follow-through after the order is delivered—all these are good reasons why you should choose Standard Register forms for the feeding of your optical scanner.

THE STANDARD REGISTER COMPANY, DAYTON, OHIO 45401

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